



Rules for Metal Fabrication Power Tools

Bench Vise

1. Mount the vise firmly. Keep it tight on bench. A loose vise is dangerous and inefficient.
2. Lock swivel base securely. Tapered-gear lock bolt prevents slippage.
3. Do not hammer the handle. Too much pressure may damage the work.
4. Never use handle extension. Normal leverage will hold work securely in place.
5. Do not hammer the beam. Your vise will give almost unlimited use. But it will not stand continued abuse.
6. Oil the screw. Remove front jaw. Use oil or light grease. This should be done frequently to prevent screw wear.
7. Keep jaw faces clean. Use wire brush or file card to remove chips and dust.

Operating a Bench Grinder

1. Operate only after you have received instruction.
2. Wear proper clothing.
3. Wear face shield, safety glasses, or goggles and use glass safety guard on grinder.
4. See that the guard is in place.
5. Set tool rest 1/16 inch to 1/8 inch from the wheel.
6. Dress wheel when necessary.
7. Make sure that no one but you is inside the operator's area.
8. Adjust grinder for your job before turning power on.
9. Stand to one side of wheel when turning power on. The wheel may be cracked, causing it to break up.
10. Turn on power after permission is given.
11. Keep hands away from the wheel while it is in motion.
12. Hold work with your hands. Ask permission to grind small pieces.
13. Use the face of the wheel only.
14. Press materials against wheel with correct amount of pressure.

Operating a Horizontal Band Saw

1. Operate only after you have received instruction.
2. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Make sure all guards are in place and operating correctly.
4. Always use proper eye protection.
5. All adjustments to the chip-removal brushes, blade tension, guides, vise, or drive system should be done with the power off.

6. Be sure blade guides are properly adjusted to both the blade and the work size or vise before starting cut.
7. Adjust feed rate so blade does not bounce or plunge into work when starting the cut.
8. Be sure work is tightly clamped in the vise and properly positioned for an efficient, safe cut.
9. Keep hands away from cutting area and brush away chips only when the machine is turned off.
10. If the material requires coolant, be sure that the system is working and that the correct coolant is used.

Operating a Portable Air Impact Wrench

1. Operate only after you have received instruction.
2. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Always use proper eye protection.
4. Be sure throttle is in the "off" position before connecting to air supply.
5. Always use impact-type sockets designed for use with power equipment.
6. Make sure work is secure or held with clamps or tightly in a vise.
7. Set torque control for correct tightness before starting the job.
8. Be sure both hands are free to properly operate an impact tool.
9. Maintain balance and firm footing at all times.
10. Always use the tool in short bursts of power.
11. Quick-change coupling should be at end of hose whip, not at the tool
12. Always disconnect the tool when not in actual use.

Operating a Portable Disc Sander/Grinder

1. Operate only after you have received instruction.
2. Wear proper clothing. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Make sure all guards are in place and operating properly.
4. Wear face shield, goggles, or safety glasses.
5. Before connecting to the power source, be sure the switch is in the "off" position.
6. Make sure back-up pad and disc are securely fastened to the tool. Unplug the sander when changing discs.
7. Do not allow the edge of the disc to touch the edge of the stock.
8. Stand clear of the spark line or spark area.
9. Sand or finish with a stroking motion; do not pause in one spot.
10. Set sander on back or on rubber stand when not in use and disconnect from power source.

Operating a Portable Electric Drill

1. Operate only after you have received instruction.
2. Wear proper clothing. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Always use proper eye protection.
4. "Unplug" the drill when changing bits.

5. Make sure switch is off and chuck key removed before connecting to power source.
6. Mark hole location with center punch (metal) or AWL (wood) before drilling.
7. Be sure work is tightly clamped or otherwise secure before drilling.
8. Drill with straight, even, steady pressure.

Operating an Oxygen-Acetylene Welder

1. Operate only after you have received instruction.
2. Wear proper clothing and protective equipment. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Be sure that you wear welding goggles. All assistants and observers must also wear welding goggles.
4. Close cylinder valve and replace protective cover before moving cylinder.
5. Fasten cylinders with a chain or other suitable device as a protection against falling or rolling.
6. Keep welding equipment free of oil and grease. Use only clean rags for wiping off welding equipment.
7. Inspect hose before using.
8. Make sure that hose is properly connected and that all connections are tight.
9. Report any leaking of cylinders or connections to supervisor immediately.
10. Make sure you have ample ventilation.
11. Keep all flammable material away from working area.
12. Release regulator pressure screw. Open cylinder valves gradually.
13. Open acetylene cylinder valve 1 turn or less. Keep wrench in place so that valve may be shut off quickly if necessary.
14. Keep acetylene pressure in the hose below 15 pounds per square inch
15. Use a flint lighter to ignite torch.
16. Close acetylene valve first if torch backfires.
17. Make certain lighted torch always points away from you and other students.
18. Keep sparks and flame away from cylinders.
19. Close cylinder valve when you have finished your welding job.
20. Quench section of metal that has been welded or mark with chalk or soapstone the word "hot" on the metal if it is necessary for you to leave your work.

Operating an Electric Welder

1. Operate only after you have received instruction.
2. Wear proper clothing to protect from arc burns. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Wear a hood with proper observation window, treated gauntlet gloves, and treated leather apron. All assistants and observers must also wear this equipment.
4. Rubber-soled shoes, without tacks, should be worn when electric welding.
5. Operator of electric welder is to allow no one to look at the arc without the dark shield (No. 10-12 lens).

6. Make sure electric welding is done only in a correctly constructed booth or room, or behind proper screens.
7. Make sure there is ample ventilation.
8. Keep all flammable material away from working area.
9. See that floor area is clear of all obstructions.
10. Report to supervisor at once if electrode holder, holder cable connection, cable, or cable terminals at the welding machine, ground clamps, lugs, or cable get hot.
11. While removing scale from the work, wear ordinary safety glasses or goggles.
12. Have a dry-chemical fire extinguisher handy when electric welding.
13. Hang up electrode holder and turn off welder when work is being changed or when work has been completed.

Operating a TIG and MIG Welder

1. Operate only after you have received instruction.
2. Wear proper clothing to protect from arc burns. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Make sure all guards are in place and operating correctly.
4. Always use proper eye protection.
5. Always buff using the lower half of the buffing wheel.
6. Additional protective welding clothing, including a helmet, long-sleeve jacket, and gloves, must be worn to prevent burns from ultraviolet and infrared rays emitted while arc welding.
7. The helmet used for TIG or MIG welding should be equipped with a minimum number-12 density shade.
8. Be certain that the welder equipped with a high-frequency stabilizing unit is installed, maintained, and used according to the recommendations of both the manufacturer and Federal Communication Commission.
9. Never touch the tungsten electrode or MIG wire while the welder is turned on. It is electrically "hot" and can cause a serious shock. 10. Never use the high frequency when performing shield metal arc (stick electrode) welding.

Metal Cutoff Saw Safety

1. Operate only after you have received instruction.
2. Wear proper clothing. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Make sure the stock is tightly clamped in place before starting your cut. If it isn't, the blade will grab it and roll it around.
4. Keep your hands clear of the path of the blade at all times. Some of these saws cut automatically; on others, you control the cut. In either case, keep your hands clear and out of danger.
5. Do not force the cut. There is often a temptation to speed things up by pushing on the saw but this could overload the machine or damage the blade.

6. Although these saws cut automatically, you should always watch the cut as it proceeds. The blade could twist or jam, the stock could twist free, or the saw could fail to stop when it should. Be there.
7. Take care in handling fresh cut pieces of metal; they could be sharp and hot. Cool and deburr them right away.
8. If metal chips or filings build up in the saw, turn it off and clean it with a brush. Never use your hand. Metal slivers really hurt.
9. Wear eye and hearing protection.
10. Wear appropriate gloves when handling the stock.